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## Sessione 1 - Sistematica e conservazione

### ***Ptilostemon casabonae* (L.) Greuter: phytochemical and biomolecular intra-specific variability of a little known endemic Mediterranean plant**

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*Ptilostemon casabonae* (L.) Greuter is a Mediterranean endemism localized in Sardinia, Corse and Hyères islands (France), where it is traditionally used for its healthy properties. The species is widespread in its natural habitats therefore it is not currently considered an endangered species (1,2). This work aims to add information on *P. casabonae*, through a combined fingerprint based on phytochemical and biomolecular patterns. Several individuals were collected from three different sites, two from Sardinia (Italy) and one from Corse islands.

The hydroalcoholic extracts of *P. casabonae* aerial parts were investigated here for the first time through HPLC-PDA-MS/MS analysis, resulting in flavonoids and phenolic acids as main components. Samples from the three sites showed similar phenolic profiles, although statistical analyses highlighted some quantitative differences for some compounds. The amplification and sequencing of *ITS*, *5S-rRNA-NTS* and *psbA* regions did not reveal nucleotide differences among *P. casabonae* samples from different geographical origins. A comparison with other *Ptilostemon* species sequences, from Genbank, revealed an inter-species variability of *ITS* and *psbA* regions (3). The stability of both the phenolic and the biomolecular profiles within *P. casabonae* allowed to identify a set of specialized metabolites that can be adopted as biomarkers and useful specific DNA regions to distinguish it unequivocally. The combination of the phytochemical and biomolecular

data provides a useful fingerprint on *P. casabonae*, able to depict this little-known plant for future investigations.

## References

- (1) Marengo A, Fenu G, Gennai M, Cogoni D, Fois M, Bacchetta G.. (2015) Schede per una Lista Rossa della Flora vascolare e crittogamica italiana. *Ptilostemon casabonae* (L.) Greuter. *Informatore Botanico Italiano* 47: 245–289.
- (2) Atzei AD. (2003) *Le piante nella tradizione popolare della Sardegna*. Carlo Delfino editore.
- (3) Marengo A., Maxia A., Sanna C., Mandrone M., Berteà C.M., Bicchi C., Sgorbini B., Cagliari C., Rubiolo P. (2019) Intra-specific variation in the little-known Mediterranean plant *Ptilostemon casabonae* (L.) Greuter analysed through phytochemical and biomolecular markers. *Phytochemistry* 161: 21-27